

ETHNOBOTANY OF *RHODIOLA ROSEA* (CRASSULACEAE) IN NORWAY

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ABSTRACT

Rhodiola rosea is a widespread species in Norway. It is well known in Norwegian folk tradition, with a variety of vernacular names, of which many reflect its traditional uses. Past use as a cure for scurvy in cattle may explain names with the prefix *kalv*- ("calf"). Its widespread use as a hair wash is also reflected in vernacular names. In the past, *Rhodiola* was planted on turf roofs to protect them from fire, i.e. as an apotropaic (supposedly averting evil forces); this tradition is documented as early as the 13th century.

SAMMENDRAG

Rosenrot *Rhodiola rosea* er en vanlig og vidt utbredt art i Norge. Den er vel kjent i folketradisjonen, med en lang rekke folkelige navn. En god del av disse gjenspeiler artens tradisjonelle bruksområder. Bruk som et botemiddel mot skjorbuk hos kyr kan forklare de mange navnene på *kalv*. Den flittige bruken til hårvask går likeens igjen i mange lokale navn. Tidligere ble rosenrot ofte plantet på tovtak for å beskytte dem mot brann, dvs. som er verneråd; denne tradisjonen er dokumentert allerede på 1200-tallet.

INTRODUCTION

Rhodiola rosea L. (Crassulaceae) (syn. *Sedum rosea* (L.) Scop., *S. rhodiola* DC.) is a common species in the mountains and coastal districts of Norway, occurring abundantly both on coastal cliffs and in alpine habitats, from sea level to 2280 m a.s.l. in the mountains of Central Norway (Elven 1994). The lowland plants belong to subsp. *rosea*, whereas those of high mountain habitats are similar to the arctic subsp. *arctica* (Boriss.) Á. & D. Löve (Elven 1994). The species as such is easily recognizable.

The genus *Rhodiola*, formerly often included in *Sedum*, comprises about 50 species, centered on the mountains of East Asia (Springate 1995). Whereas *Sedum* has hermaphroditic flowers, many *Rhodiola* species, including *R. rosea*, are dioecious (Lippert 1995). *Rhodiola rosea* is a hemicryptophyte with thick rhizomes. The annual shoots are unbranched, and densely clad with flat, fleshy leaves. *Rhodiola rosea* has a circumpolar-montane/alpine distribution (Hultén & Fries 1986; Lippert 1995). Hultén (1958) considered *R. rosea* "A collective species consisting of numerous races differing chiefly in size, form and dentation of the leaves and in the colour of the flowers."

Rhodiola rosea has received increased attention during the last few years, not least due to its alleged medical properties, e.g. as an adaptogen, supposedly enhancing memory, stress mastering, etc.; some of these effects have been confirmed by recent studies (Boon-Niermeijer et al. 2000; Spasov et al. 2000). Germano & Ramazanov (1999) provide extensive references to Russian literature on its medical properties. For a review of current knowledge, see Brown et al. (2002).

Folk tradition claiming positive health effects derives largely from Asia (eastern Russia, Mongolia, China). Norwegian tradition is less inclined to claim "wondrous" properties, but may provide valuable information of potential uses. Both the rhizomes and flowering stems of *R. rosea* have found a number of uses in folk tradition in Norway. The present paper aims at a comprehensive review of the ethnobotany of *R. rosea* in Norway, including vernacular names, medicinal uses and other traditions. Unless otherwise stated, all citations have been translated from Norwegian.

Sources

Høeg (1974) assembled a vast body of information on plant names and uses in Norway, including a three-page chapter on *Rhodiola rosea*. It is largely based on his own data, and fails to incorporate more than a fraction of existing literature, e.g. the interesting note of Søreide (1952). Nordhagen (1934) studied the old tradition of planting *R. rosea* on house roofs in Norway. Alm (1996a) discussed its past use as a cure for scurvy. Recently, Dragland (2001) reviewed data on *R. rosea* as part of a project aimed at commercial cultivation in Norway. His report includes some ethnobotanical data, but these are largely culled from Høeg (1974) and some secondary sources.

Scattered notes on *R. rosea* and its uses in Norway occur in numerous other publications on folk medicine and other traditions. In addition to these, I have incorporated some data from archival sources, mainly NFS (Norsk folkeminnesamling/Norwegian folklore collection) and NOS (Norsk ordbok, seddelarkivet/Norwegian dictionary, card archive). Furthermore, some data have been excerpted from my own ethnobotanical field work in North Norway; these are referred to as "interview + year." Informants are not identified here; transcripts and some recordings of the original interviews are stored at the Department of Botany, Tromsø Museum (TROM).

Vernacular Names

In Norwegian folk tradition, widespread and well-known plants are usually known either under a single, ubiquitous vernacular name (e.g. *blåbær*, "blue berries" for *Vaccinium myrtillus* L.), or display a substantial array of widely different names (e.g. more than 100 names for *Ductylorhiza maculata* (L.) Soó, see Alm 2000). With more than a half-hundred Norwegian vernacular names recorded so far, *Rhodiola rosea* belongs to the latter group. No record of its Norse

name (or names) seems to have survived (Heizmann 1993); the oldest names included in the present paper date back to 1599. A compilation of Norwegian and Sámi names is found in Table 1. Some are of local use, and may be confined to a single village; others are widespread. A couple of name-groups (see Fig. 1) are of particular interest:

a) In Western Norway, *R. rosea* has a set of names with the prefix *syste*—or *syster*, *systre*, *søster* and similar terms (Høeg 1974; Lagerberg et al. 1955; Lid 1941; Nordhagen 1934; Søreide 1952; Strøm 1762), e.g. *systegras* (“-grass”), *systelykjil* (“-key”), *systerøter* (“-roots”). Nordhagen (1934) noted only a deviant form, *systergras* (“-grass”), and suggested that *syster* (interpreted as meaning “sister”) might refer to the occurrence of separate male and female plants—perhaps a rather too botanical explanation, though Høeg (1974) noted that people at least locally had noticed that there were two different kinds of plants. The latter author recorded a number of similar names, partly with *syste*- and partly with *syster*-. He suggested the latter to be correct, perhaps influenced by the linguist Ivar Aasen’s record of *søstregras* (“sisters grass”) at Sunnmøre in the 1830s (see Lid 1941). Evidently, Høeg was not aware of the discussion in Søreide (1952), who argued convincingly that the prefix was related to the verb *syste* or *syfte*, “clean” or “purify.” *Syftesok* is an old calendar term for July 2, at which date apotropaic plants (e.g. twigs of *Alnus* sp. and *Juniperus communis* L.) were placed in the fields to ward off vermin (Bugge 1921; Riste 1916; Søreide 1952; Wille 1786). Thus, *systegras* and similar names may suggest that folk tradition ascribed *Rhodiola rosea* abilities to ward off evil. This is confirmed by the widespread belief in the plant’s ability to protect against fire (see below). The prefix *syster*- (and *søster*-), i.e. “sister,” is probably a younger re-interpretation of an old name.

b) In most of North Norway, *R. rosea* is known under names with the prefix *kalv*- or *kalve*- (“calf”), e.g. *kalvegress* (“calf grass”), *kalvedans* (“calf dance”), and others (Alm 1996a; Elvebakk 1979; Heltzen 1834; Høeg 1974; Lagerberg et al. 1955; Mørkved 1996; Øksendal 1977; Qvigstad 1901; Strømpdal 1929; NOS). *Kalverot* (“calf root”) is also mentioned from the Bergen area in 1599 (Bring 1758; Holmboe 1953; Lagerberg et al. 1955; Rørdam 1873). The name may well derive from North Norway, which was the source of most of the fish exported from the major trade port of Bergen. The origin of the prefix *kalv*- is unclear. Alm (1996a) suggested that it might be due to the past use of *R. rosea* as cattle fodder, potentially an important cure for scurvy (see below). An alternative explanation is a relation to the old Norse term for the thick muscle on the hind side of the leg (Lagerberg et al. 1955), still known (by a Norse loan-word) as *calf* in English. If so, *kalv*- might refer to *R. rosea*’s thick leaves. At least some of the associated suffixes support the former interpretation, e.g. *kalvegror* (“calf growth”) and perhaps the widespread *kalvedans* (“calf dance”); an unlikely activity for starving cattle. Reichborn-Kjennerud (1922) suggested that *kalvedans* could refer to the plant’s dancing and nodding behaviour in wind, but this leaves the

TABLE 1. Norwegian and Sámi vernacular names for *Rhodiola rosea* in Norway. Names are given with modern Norwegian and North Sámi spellings; deviant spellings used in the original sources are indicated. "Interview" refer to ethnobotanical records made by the author. As far as possible, geographic origin is indicated, using present-day administrative units (counties and municipalities). English translations are literal, but note that some may be folk re-interpretations of older names (see text). A few terms cannot be translated, e.g. the suffix *tort*, otherwise a frequent vernacular name for *Cicerbita alpina* (L.) Waltr., and *mo/masott*, which are widespread Norwegian terms for a somewhat diffuse disease.

Vernacular name	English translation	Area and source
Norwegian		
Baldans	Bal dance	North Norway: Nordland: Leirfjord (Jenssen 1982:43)
Bergakonge	Rock king	Western Norway: Hordaland: Hardanger, interior area (Høeg 1974:597)
Bergbuk	Rock buck	Southern Norway: Aust-Agder: Bygland; Central Norway: Nord-Trøndelag: Verdal (Høeg 1974:596)
Bergebruse	Rock buzz	Southern Norway: Aust-Agder: Bykle; Bygland; Valle (Høeg 1974:596)
Bergebuk	Rock buck	Southern Norway: Aust-Agder: Valle (Høeg 1974:596)
Berggull	Rock gold	Northern Norway: Nordland: Beiarn (Vreim 1943:50, footnote, as bergull)
Bergkrans	Rock wreath	Central Norway: Sør-Trøndelag: Oppdal (Donali 1988:587, as bæjkrans; Høeg 1974:597)
Berjebruse	Rock buzz	Western Norway: Møre og Romsdal: Surnadal (Høeg 1974:596-597, as bæjjebruse)
Bukkablom	Buck flower	Western Norway: Rogaland: Forsand (Høeg 1974:597)
Bukkebruse	Buck buzz	Nordland: Vesterålen; Troms: Senja (Ross 1895:66, 71)
Feitbukk	Fat buck	Central Norway: Nord-Trøndelag: Lierne (Sørli); Namdalseid (Høeg 1974:596)
Fjellbruse	Mountain buzz	Møre og Romsdal: Nordmøre (Ross 1895:66)
Fjellbu	Mountain plant	North Norway: Nordland: Sørfold (Engan 2002:56)
Fjellkaur	Mountain curl	Norway: Nordland (Høeg 1974:597; Nordhagen 1934:124); Saltdal (Nordhagen 1934:124); Skjerstad (Høeg 1974:597; NOS); Beiarn (Vegusdal 1979:159, as fjellkaur; Vreim 1943:50; NOS)
Fjellknesk(e)	Mountain squeak	North Norway: Nordland: Bodø (Høeg 1974:597)
Fjellknirke	Mountain squeak	North Norway: Finnmark: Nordkapp (Høeg 1974:597)
Fjellkrans	Mountain wreath	Central Norway: Sør-Trøndelag: Midtre Gauldal (Haukdal 1961:141-142); Soknedal (Høeg 1974:597)

TABLE 1. continued

Vernacular name	English translation	Area and source
Norwegian		
Gnagblomst	Itch (squeak?) flower	North Norway: Nordland: Værøy (Høeg 1974:597)
Hårblomster	Hair flowers	Central Norway: Sør-Trøndelag: Bjugn; Stjørna (Høeg 1974:596)
Hårkjeks	Hair "biscuit" (plant)	Western Norway: Hordaland: Fusa (Høeg 1974:596)
Hårvekster	Hair growth	Western Norway: Sogn og Fjordane: Nordfjord (Krogh 1813:266, 282, as Haarwæxter); Møre og Romsdal area (Gunnerus 1766:49, as Haarwæxter); Central Norway: Sør-Trøndelag: Bjugn; Stjørna (Høeg 1974:596)
Hårvokst	Hair growth	Eastern Norway: Oppland: Dovre; Lesja; Lom (Høeg 1974:596), Nord-Fron: Sikkilsdalen (Nordhagen 1934:124, footnote); Gudbrandsdalen area (Nordhagen 1934:123); Western Norway: Møre og Romsdal: Romsdalen area (Nordhagen 1934:123); Central Norway: Sør-Trøndelag: Oppdal (Donali 1988:587; Rise 1947:56)
Hårvokster	Hair growth	Norway, unspecified (Schübeler 1888:268, as Haarvokster); Eastern Norway: Gudbrandsdalen area (Nordhagen 1934:123); Oppland: Lom (Høeg 1974:596); Western Norway: Møre og Romsdal (Gunnerus 1766:49; Hukkelberg 1952:37), Romsdalen area (Nordhagen 1934:123); Sunnmøre area (Strøm 1762:119, as Haar-Voxter); Neset: Eresfjorden (Høeg 1974:596); Volda (Høeg 1974:596); Fræna (Høeg 1974:596); Halså (Høeg 1974:596); Surnadal (Høeg 1974:596; NOS, as hårvåkkster); Sunndal: Ålvundeid (Høeg 1974:596); Central Norway: Grøten—Vedøy (Dahl 1896:70, 1899:8, 58, as Haar-Voxter); Sør-Trøndelag: Oppdal (Donali 1988:587; Rise 1947:50, 56); Roan (Høeg 1974:596); Nord-Trøndelag: Meråker (Høeg 1974:596); Stjørdal/Meråker (Leirfall 1968:510)
Hedlekaure	Heal-curl ?	Western Norway: Hordaland: Hardanger area (Reichborn-Kjennerud 1922:57); Kvam (NFS Gade-Grøn 149)
Heilkaur	Heal-curl	North Norway: Nordland: Rana (unpublished note by Axel Blytt, 1870)
Heilkaure	Heal-curl	Norway, unspecified (Nordhagen 1947:39); North Norway: Nordland: Heigeiland? (Reichborn-Kjennerud 1922:57)

TABLE 1. continued

Vernacular name	English translation	Area and source
Norwegian		
Helkaure	Heal-curl	North Norway: Nordland: Rana (unpublished diary by Axel Blytt, 1870-1875; NOS)
Huskall	House man	Central Norway: Nord-Trøndelag: Lierne: Nordli (Høeg 1974:595, 597)
Kalvdans	Calf dance	Central Norway: Nord-Trøndelag: Vikna (Høeg 1974:596-597); North Norway: Nordland: Hattfjelldal (NFS O.A. Høeg 572); Vevelstad (NFS O.A. Høeg 425); Brønnøy (Strompdal 1929:85, NFS O.A. Høeg 415; NOS); Vefsn (Øksendal 1977:99; NFS O.A. Høeg 88, 445, 719); Rana (NOS, note by Hallfrid Christiansen); Leirfjord (Jenssen 1982:43); Rødøy (NFS O.A. Høeg 36); Flakstad (Mørkved 1996:18); Troms: Harstad; Ibestad; Tromsø: Hillesøy (Høeg 1974:597); Finnmark: Lebesby (Høeg 1974:597)
Kalveblomst	Calf flower	North Norway: Troms: Harstad; Skjervøy (Høeg 1974:597); Kvænangen (interview 2004)
Kalveblomster	Calf flowers	North Norway (Elvebakk 1979:47)
Kalvedans	Calf dance	Central Norway: Nord-Trøndelag: Vikna (Høeg 1974:597); North Norway (Elvebakk 1979:47, as kalvedainjs); Nordland: Vefsn (NFS O.A. Høeg 145); Dønna (NFS O.A. Høeg 145); Brønnøy (Høeg 1974:597); Troms: Harstad (Høeg 1974:597); Ibestad (Høeg 1974:597); Tromsø (Høeg 1974:597; NOS; interview 2001); Kvænangen (interview 1988, 2003); Finnmark: Hammerfest (Qvigstad 1901:311; interview 1998); Kvalsund (interview 2003); Lebesby (Høeg 1974:597); Gamvik (interview 1998); Berlevåg (interview 2003); Båtsfjord (interview 1988)
Kalvedaude	Calf death	North Norway: Nordland: Bindal (Høeg 1974:597)
Kalvegras/kalvgras	Calf grass	North Norway: Nordland: Lurøy; Rødøy; Ofoten area, Troms: Karlsøy (Høeg 1974:597)
Kalvegress	Calf grass	North Norway: Nordland: Rana (Heltzen 1834:8, as Kalvegræs)
Kalvegror	Calf growth	North Norway: Nordland: Vågan (Mørkved 1996:18); Langøya area (Mørkved 1996:18); Narvik (NOS, note by Hallfrid Christiansen); Troms: Tromsø (NOS)
Kalvekål	Calf cabbage	North Norway: Nordland: Rana (Høeg 1974:597)
Kalveknark	Calf squeak (?)	North Norway: Troms: Bjarkøy (Høeg 1974:597)
Kalverompe	Calf tail	North Norway: Troms: Salangen; Tranøy (Høeg 1974:597)

TABLE 1. continued

Vernacular name	English translation	Area and source
Norwegian		
Kalverot	Calf root	Western Norway: Hordaland: Bergen (Bring 1758:64; Holmboe 1953:9-10; Rørdam 1873:405, diary note of Sivert Grubbe July 5, 1599, as Kalfweroed)
Kalvespreng	Calf burst	North Norway: Nordland: Brønnøy (Høeg 1974:597)
Kalvestolpe	Calf post	North Norway: Nordland: Herøy (Høeg 1974:597)
Kalvgras	Calf grass	North Norway: Nordland: Lurøy (NFS O.A. Høeg 159); Rødøy (NFS O.A. Høeg 36)
Kalvgress	Calf grass	North Norway: Nordland: Lurøy (unpublished note by Hallfrid Christiansen); Vestvågøy (Mørkved 1996:18)
Kalvgror	Calf growth	North Norway: Nordland: Vestvågøy (Mørkved 1996:18); Bø (NFS O.A. Høeg 496); Sortland (NFS O.A. Høeg 715); Langøya (Mørkved 1996:18)
Kalvkaur	Calf curl	Southeast Norway: Vestfold: Sandefjord (NFS O.A. Høeg 603); North Norway: Nordland: Rana (Høeg 1974:597)
Kalvkål	Calf cabbage	North Norway: Nordland: Sortland (NFS O.A. Høeg 346)
Kalvlyng	Calf heather	North Norway: Nordland: Hadsel (Høeg 1974:597)
Kalvtort	Calf tort	North Norway: Nordland: Hadsel (Høeg 1974:597)
Knerke	"Squeek"	North Norway: Finnmark: Hammerfest (Høeg 1974:597; interview 2002)
Långrot	Long (?) root	Central Norway: Sør-Trøndelag: Melhus; Hølonda; Midtre Gauldal: Singsås; Holtålen; Ålen (Høeg 1974:597)
Longrot	Long (?) root	Central Norway: Sør-Trøndelag: Melhus; Hølonda; Midtre Gauldal: Singsås; Holtålen; Ålen (Høeg 1974:597)
Lungerot	Lung root	Eastern Norway: Hedmark: Alvdal; Tynset (Høeg 1974:596-597)
Morot	Mo root	Central Norway: Nord-Trøndelag: Snåsa (Høeg 1974:597)
Mosottrot	Mosott root	Central Norway: Nord-Trøndelag: Snåsa (Høeg 1974:597)
Oksfot	Ox foot	Central Norway: Nord-Trøndelag: Nærøy; Foldereid; Grong; Harran; Høylandet; Snåsa (Høeg 1974:597)
Oksstut	Ox bull	Central Norway: Nord-Trøndelag: Nærøy; Foldereid (Høeg 1974:597)

TABLE 1. continued

Vernacular name	English translation	Area and source
Norwegian		
Smærbukk	Butter buck	Eastern Norway: Telemark: Vinje (Halvorsen 1988:197)
Smørbukk	Butter buck	Norway, unspecified (Schübeler 1888:268); Eastern Norway: Oppland: Land (NOS); Vestre Slidre (NOS, unpublished notes by G. Kirkevoll and A. Ødegaard); Valdres area (Kirkevoll 1940:173); Western Norway: Hordaland: Fusa; Granvin; Vaksdal; Voss; and several other municipalities (NOS, unpublished notes by T. Hannaas and N. Lid); Møre og Romsdal (NOS); Romsdal area (Gunnerus 1766:49, as Smørbuk, cf. Nordhagen 1934:124)
Smørbukk/smørbokk	Butter buck	Western Norway: Møre og Romsdal: Fræna; Halså; Nesset; Eresfjord; Sunndal: Ålvundeid; Sunndal; Volda; Central Norway: Sør-Trøndelag: Roan; Nord-Trøndelag: Meråker (Høeg 1974:596)
Smørstakk	Butter skirt	Norway, unspecified (Schübeler 1888:268, as Smørstak; cf. Nordhagen 1934:124)
Søsteløkjel	Purifying key	Western Norway: Sogn og Fjordane: Jølster (Høeg 1974:597)
Søsteløkla	Purifying keys	Western Norway: Sogn og Fjordane: Jølster (Høeg 1974:597)
Søsteløkklar	Purifying keys	Western Norway: Sogn og Fjordane: Jølster (Høeg 1974:597)
Søstergras	Sister grass	Møre og Romsdal (Hukkelberg 1952:37); Halså (NFS Maurit Fugelsøy III:7)
Søstergress	Sister grass	Western Norway: Sogn og Fjordane: Nordfjord (Krogh 1813:266, as Søstergæs); Møre og Romsdal: Sunnmøre area (Strøm 1762, as Søster-Græs; Gunnerus 1766:49, as Søster-græs)
Søsterløk	Sister onion	Western Norway: Sogn og Fjordane: Jølster (Høeg 1974:597)
Søstregras	Sisters grass	Western Norway: Møre og Romsdal: Sunnmøre area (Lid 1941:75, annotation on a specimen in Ivar Aasen's herbarium from 1837 – 39)
Stubberot	Stump root	Norway (Bring 1758:40)—recorded by Sivert Grubbe (as Stubberod) in 1599
Systegras	Purifying grass	Western Norway: Sogn og Fjordane: Bremanger: Davik (Høeg 1974:595); Eid (Høeg 1974:595, 597; Søreide 1952:29); Gløppen; Stryn: Innvik (Høeg 1974:597); Møre og Romsdal: Rauma (Søreide 1952:29)
Systelykkel	Purifying key	Western Norway: Sogn og Fjordane: Naustdal (Søreide 1952:29)

TABLE 1. continued

Vernacular name	English translation	Area and source
Norwegian		
Systelykla	Purifying keys	Western Norway: Sogn og Fjordane: Naustdal (Høeg 1974:597)
Systergras	Sister grass	Norway (Schübeler 1888:268; Reichborn-Kjennerud 1922:57); Sogn og Fjordane: Lærdal; Borgund; Gloppen; Jølster (Høeg 1974:579); Hornindal (Melheim 1953:49); Møre og Romsdal: Volda; Ørsta (Høeg 1974:597)
Systerlykkjell'e	Sister keys	Western Norway: Sogn og Fjordane: Førde (Høeg 1974:597)
Systerlykla	Sister keys	Western Norway: Sogn og Fjordane: Gaular (Høeg 1974:597)
Systerlyklar	Sister keys	Western Norway: Sogn og Fjordane: Førde; Gaular; Jølster (Høeg 1974:597)
Systerose	Purifying rose	Western Norway: Møre og Romsdal: Vanylven: Syvde (Høeg 1974:597)
Systerøter	Purifying roots	Western Norway: Sogn og Fjordane: Selje (Søreide 1952:29)
Systerrot	Sister root	Western Norway: Hordaland: Lindås: Alversund (Høeg 1974:596-597); Sogn og Fjordane: Fjaler (NOS, unpublished note by H. Tveit); Møre og Romsdal: Vanylven: Syvde (Høeg 1974:597)
Systregras	Sisters grass	Western Norway: Sogn og Fjordane: Lærdal: Borgund, Møre og Romsdal: Stranda; Sunnlyven (Høeg 1974:597)
Takbruse	Roof buzz	Western Norway: Møre og Romsdal: Rindal (Høeg 1974:597; Mo 1925:84); Surnadal (Høeg 1974:597)
Takdupp	Roof-nod	Central Norway: Sør-Trøndelag: Meldal (Høeg 1974:597)
Takgull	Roof gold	Central Norway: Nord-Trøndelag: Nærøy (Høeg 1974:597)
Takkrans	Roof wreath	Central Norway: Sør-Trøndelag: Meldal (Høeg 1974:597)
Taklauk	Roof onion	North Norway: Nordland: Beiarn (Vegusdal 1979:159)
Tjukke-Nils	Fat Nils	Western Norway: Rogaland: Kvitsøy (Høeg 1974:597)
Trappakall	Staircase man	Central Norway: Sør-Trøndelag: Ålfjord: Stokksund (Høeg 1974:597)
Trappkall	Staircase man	Central Norway: Sør-Trøndelag: Roan (Høeg 1974:597)
Trappros	Staircase rose	Central Norway: Sør-Trøndelag: Roan (Høeg 1974:597)
Gålbberáhta	Calf sprout	North Norway: Finnmark: Alta (interview 1998)

TABLE 1. continued

Vernacular name	English translation	Area and source
North Sámi		
Gálbberássi	Calf grass	North Norway: Troms: Lavangen (Qvigstad 1901:311, as galbe-rasse); Finnmark: Deatnu/Tana (interview 1996)
Gálbberássit	Calf grasses	North Norway: Troms: Lyngen (Qvigstad 1932:78, as galberaset)

prefix unexplained. The few Sámi names recorded so far, *galbberáhta* ("calf sprout") and *galbberássi* ("calf grass"), belong to the same name complex.

c) Vernacular names with the prefix *hár-* ("hair") occur in parts of southern Norway (Dahl 1898; Donali 1988:587; Høeg 1974; Lagerberg et al. 1955; Nordhagen 1934; Reichborn-Kjennerud 1941; Rise 1947; Schübeler 1888; NOS). They obviously reflect the use of a decoction of *R. rosea* as a hair wash. Vernacular names incorporating the term *kaur* or *kaure*, meaning something curly, may also refer to such use (Nordhagen 1934, 1947).

d) *R. rosea* has sometimes appropriated vernacular names more frequently used for other species, e.g. *smørbukk* ("butter buck"), more frequently a name for *Hylotelephium telephium* (L.) Ohba (syn. *Sedum telephium* L.), e.g. in inland areas adjacent to the latter's mainly coastal distribution (Halvorsen 1988; Kirkevoll 1940), and *taklauk* ("roof onion"), normally *Sempervivum tectorum* L., at a few stations (Vegusdal 1979).

e) A deviant name, *knerke*, was recorded from Hammerfest, Finnmark by Høeg (1974); two informants both explained it as an onomatopoeicon: "it squeaks when the flowers are touched"; "if the leaves are touched, one hears a squeaking sound" (translated from Norwegian). This seems to be a well-known tradition in parts of Finnmark; one of my own informants knew the name *kalvedans* from the same area, but suggested *knerke* as an alternative name: "That sound when you touch them, it says [knerke]... I think it was a sound-like name we had." (interviews 1998 & 2002). A few other, sound-based vernacular names are known from North Norway (Table 1).

Rosenrot ("rose root"), the "official" Norwegian name of *R. rosea*, has been introduced through floras. It was first used in the Danish herbal of Paulli (1648), probably based on the German *Rosenwurz*, and has no root in Norwegian folk tradition (Høeg 1974; Nordhagen 1934).

Only two Sámi names for *R. rosea* have been recorded in Norway: *galbberássi* both in Troms and Finnmark, and *galbberáhta* in the latter county. *Gálbberássi* is obviously a Norwegian loan-word, identical to "kalvegras." Qvigstad (1901, 1932) noted it from Lavangen and Lyngen, Troms. It is still used, and was re-

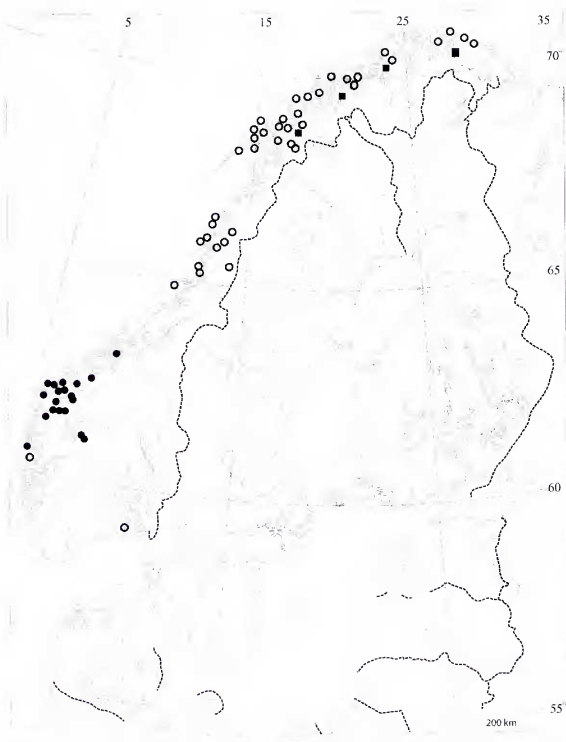


FIG. 1. Geographical distribution of two major groups of vernacular names for *Rhodiola rosea* in Norway. **A.** Norwegian names with prefix of the *syste(r)/søster* type, based on the verb *syfte* or *syste*, "protect" (dots). **B.** Names with a prefix meaning "calf": Norwegian *kalv-/kalve-* (open circles) and North Sámi *gálbbe-* (squares).

corded in the Deatnu/Tana area of Finnmark in the 1990s (Alm & Iversen, unpublished data).

***Rhodiola rosea* as a Cure for Scurvy**

Nordal (1939) studied the contents of vitamine C in various plants species traditionally used to treat scurvy in Norway. Scurvy-grass *Cochlearia officinalis* L. and cloudberry *Rubus chamaemorus* L. may have been the most important of these, at least for human use (Alm 1995, 1996b; Eckblad 1989). *Rhodiola rosea* contains less vitamine C; 12 mg/g (rhizome) and 33 mg/g (fresh leaves) according to Nordal (1939, 1946). Still, it may have been an important source, in particular for livestock (Alm 1996a). Insufficient feeding of cattle during the winter was an established tradition in Norway, and if spring was late, livestock could be heavily affected by scurvy. Cloudberry (and, perhaps less so, scurvy-grass) were reserved for human consumption, but *Rhodiola rosea* was not. Secondly, due to its preference for cliff habitats, the rhizomes could be collected even in late winter. It is also one of the first plants to sprout in spring, and both rhizomes and fresh shoots may thus have served as an important remedy for scurvy in livestock. Records in Elvebakk (1979) and Høeg (1974) confirm that *R. rosea* was usually collected during the period of fodder shortage in late spring. As noted above, such use is a likely explanation for the wide-spread vernacular names with *kalv-* as a prefix, which may thus reflect the species' importance for making cattle (and calves) survive (Alm 1996a; Høeg 1974).

A letter to Olaf I. Rønning, then curator at Tromsø museum, was sent as a response to his popular account (Rønning 1959) of *R. rosea* and its uses. The comment, based on tradition at the west coast of Senja island, Troms county, confirms the use as cattle fodder:

"In my childhood, about the turn of the century [1900], we [as] children were frequently told to collect *kalvegjør*, i.e. *roserot* [*Rhodiola rosea*]. It was used as fodder for calves, [which had been] born during the winter, in spring. As it was almost always a shortage of fodder [at this time], the *kalvegjør* was a welcome food for the calves (and a vitamine source). The *kalvegjør* sprouted earlier than other plants (in our area of southern Berg, and the islets) and was easy to get hold of" (letter from Paul Hay, Gryllefjord, dated January 20, 1960).

Some early data on *R. rosea* ethnobotany, including its use as an antiscorbutic, were recorded during the Danish-Norwegian king Christian IV's naval expedition to the northern outposts of his kingdom in 1599 (Alm 1996a; Nielsen 1873). At least two of the Danes participating (Sivert Grubbe and Jonas Charisius) wrote diaries. A comparison of the two leaves no doubt that Grubbe was the better botanist; his diary (Bring 1758; Rørdam 1873) contains scattered notes on plants seen during the voyage. Despite this, Charisius (1773-76) is more frequently cited, often from an 18th century transcript by Hans Paus (extracts e.g. in Hansen & Schmidt 1985).

Although the most interesting comment on *R. rosea* was made during a visit to the NW Kola peninsula, now on Russian territory (but also claimed as

belonging to the king's territory), it is worth recording here: "On this island Kildin there is found a kind of herb at the shore, which the Sámi and Russians call *orpin*, and [which] is very remarkable to use for scurvy, the root smells of rose, and tastes well in beer" (Charisius 1773-76:74; Hansen & Schmidt 1985:191, translated from Danish).

Qvigstad (1901), in his survey of Sámi plant names, accepted *orpin* as an East Sámi term. It is not, however, included in a dictionary of East Sámi as used in the Kola Peninsula (Genetz 1891). As noted by Alm (1996a), *orpin* is the French name of *R. rosea*, and it is highly unlikely that a similar name should occur in both East Sámi and Russian. The suggestion that it was termed thus by the Sámi is obviously wrong; educated Russians could perhaps have known this name. Qvigstad (1901) couples *orpin* with the Norwegian term *Stubberød*, seemingly as a translation. The latter name is mentioned in Grubbe's Latin diary, in the entry for May 18, 1599:

"Collegimus in isto monte herbas, quas angli vocant *orpin*, Norvegi *Stubberød*, præsentissimum remedium contra scorbutum, in illis locis valde familiare. Capitaneus noster usus est illius herbae foliis loco acetarii." (Bring 1758:40-41)—"In this mountain we collected some herbs, which the English call *orpin*, the Norwegians *stubberød*, an excellent remedy for scurvy, and very frequent in these places. Our captain [king Christian IV] used the leaves of this plant as a salad."

Thus, Grubbe certainly did not record *orpin* as a local name (though it was hardly an English term either, as he believed). *Stubberød* (*stubberød* in present-day Norwegian) is clearly identified as a Norwegian name, otherwise unknown, but easily comprehensible; its meaning ("stump root") is a descriptive term for the rhizomes in their early spring state, i.e., just at the time they were presumably gathered as a cure for scurvy.

Pontoppidan (1752) also noted that *R. rosea* had "en herlig Kraft mod Skiørbug"—"a splendid force against scurvy." Gunnerus (1766) mentioned that "Radix scorbuticis salutaris"—"the root heals scurvy"; this seems to be the last suggestion of human use as an antiscorbutic in Norway.

***Rhodiola rosea* as Food**

Both the rhizomes and green parts of *Rhodiola rosea* are edible. Human consumption is well known from other areas, e.g. Siberia, but seems to have been rare in Norway—at least according to our present knowledge. Ruge (1762), vicar in Valdres, advocated plantations of *R. rosea* as food in times of need, but it is unlikely that this idea was based on local tradition. On the contrary, he referred to Egede (1741), who had noted that the rhizomes were eaten in Greenland. Ruge added that "I have eaten it myself, both fried and roasted as well as cooked, and neither in taste nor effect have I found it unpleasant." (Ruge 1762:286).

Høeg (1974) recorded a single, modern instance of *R. rosea* consumption in western Norway; an informant from Uvdal (Buskerud, SE Norway) claimed that the leaves had been ground and mixed in dough. In addition, children could eat the fresh leaves.

According to Engan (2002), people at Sørfold in North Norway used ground bark of birch (*Betula pubescens* Ehrh.) as a flour substitute during times of need. The resulting flour was coarse and hardly suited for dough. In order to improve it, an unidentified alpine herb called *fjellbu* ("mountain plant") was added. The brief description included fits *Rhodiola rosea*, and hardly anything else, suggesting that it may have had some tradition as an emergency food. No information is given on the plant part used, only that it was boiled before being added to the flour.

***Rhodiola rosea* as Hair Wash**

A decoction of *R. rosea* has been widely used as a hair-wash in Norway, e.g. along the western coast northwards at least to Nordland (Donali 1988:587; Gunnerus 1766; Høeg 1974; Hukkelberg 1952; Lagerberg et al. 1955; Reichborn-Kjennerud 1922, 1941; Rise 1947; Strøm 1762; NOS). This is frequently indicated by its vernacular names (see above), as noted e.g. by the latter author: "In the fjords, it is called Søster-Græs [i.e. sister grass], but otherwise everywhere [at Sunnmøre, western Norway] Haar-Voxter [hair growth], because one boils it in water and washes the hair with it, in the belief, that it will grow well thereafter" (Strøm 1762:119). Two hundred years later, folk tradition in Møre og Romsdal remained unchanged: "Søstergæs [sister gras] is also called *hårvokster* [hair growth] because if one boiled it in water and washed the hair with it, the hair would grow much better afterwards" (Hukkelberg 1952:37).

The motivation for using *R. rosea* as a hair-wash, according to folk tradition, varies slightly. Some claimed that it prevented hair loss (Donali 1988; Rise 1947), and ensured a long, fine hair, others that it stimulated hair growth or healed various complaints affecting the hair, e.g. dandruff. An undated archival note, again from Møre og Romsdal, adds a piece of folk etymology: "Women who were about to loose their hair made a kind of hair oil from *rosenrot* which made the hair grow well—for this reason [it was] called *søstergæs* [sister grass]." (NFS Maurits Fugelsøy III:7).

At Narvik in Nordland, North Norway, folk tradition claimed that plants for use as hair wash should be collected in spring or early summer:

"If you manage to collect *kalvegrøt* before the cuckoo [*Cuculus canorus*] cries, and then boils a decoction from it, it is good for washing the hair." (NOS, unpublished 1940s note by Hallfrid Christiansen).

Other Medical Uses

Apart from its use as an antiscorbutic and as a hair-wash, *Rhodiola rosea* has found little use in Norwegian folk medicine. Høeg (1974) noted that it had been used as a remedy for lung diseases at Volda, W Norway, but also that this might be inspired by its local vernacular name, *lungerot* ("lung root"). From the Nordfjord area of W Norway, Krogh (1813) merely noted that the rhizome was sometimes used as a medicine, and considered an adstringent. According to Kirkevoll (1940), *R. rosea* was "much used as an ointment for wounds" in the

Valdres area of interior SE Norway. In Sunnfjord, W Norway, a poultice of *R. rosea* and ground oats *Avena sativa* L. was used to treat wrenched or swollen limbs (Reichborn-Kjennerud 1922; NFS Gade-Grøn 149). The vernacular name *mosottrot*, used in Snåsa, Nord-Trøndelag (Høeg 1974), also implies a medical use. In folk medicine, *mosott* was a frequently diagnosed, if rather ill-defined disease, usually treated with magical means, in particular “measuring” the patient’s body with a woolen tread.

In Lyngen (Troms, North Norway), Sámi folk medicine used a decoction to treat urinary disorder (Qvigstad 1932; Steen 1961): “A decoction of *Rhodiola rosea* (...) is drunk, and the softened roots [rhizomes] are rubbed at both sides of the joint. When the urine starts to drip, another mouthful is consumed.” (Qvigstad 1932:78; translated from German).

In his late 17th century topographical description of Finnmark, district governor Hans H. Lilienskiold mentioned that the Sámi of Finnmark used rose water to treat eye diseases (Qvigstad 1932). No further details are given. *Rosa majalis* J. Herrmann is the only species of the genus occurring in Finnmark, but it is very rare, and it is thus possible that the cure was a decoction of *Rhodiola rosea*, with its characteristic, rose-like odour.

Folk Veterinary Medicine

Apart from its use to heal (or prevent) scurvy, there are few records of *Rhodiola rosea* being used in folk veterinary medicine in Norway. Høeg (1974) noted that people at Hølonde (Sør-Trøndelag, Central Norway) had used it as a “horse medicine, long ago”—which does not exclude the possibility that even this was as a cure for scurvy.

In Hardanger, W Norway, a decoction was given to cattle to treat many kinds of disease, in particular intestinal parasites (Reichborn-Kjennerud 1922). The original record, by Lars T. Steine, dated 1920, is found in the NFS archives: “*Hedlekaure* is the name of a plant that grows preferably in the shade (...) It was used for all kinds of animals; it was boiled and given in drink; it was good for many kinds of livestock diseases in particular intestinal parasites” (NFS Gade-Grøn 148).

Rhodiola on House Roofs

Rhodiola rosea was formerly a frequent sight on turf roofs in Norway. According to a widespread tradition, its presence there should protect against fire, e.g. caused by lightning (Fægri 1944; Haukdal 1961; Høeg 1974; Lagerberg et al. 1955; Nordhagen 1934; Vegusdal 1979). A similar tradition related to *Sempervivum tectorum* L. is widespread in Europe. *S. tectorum* is not an indigenous species in Norway, but has a long history of cultivation, and is naturalized at scattered stations in southernmost Norway (Elven 1994; Nordhagen 1941). Both living plants and the associated traditions are likely to have been imported from Central Europe during the middle ages. Further north in Norway, in areas where *S. tectorum* does not thrive, *Rhodiola rosea* has acquired a similar reputation of

protecting roofs from fire. According to folk tradition in Gauldal, Central Norway, its purpose was to avert the anger of Tor, the Norse god who controlled thunder and lightning:

"It was the god Tor who was to be appeased by planting *fjellkransen* on the roof. When he saw the yellow flower on the roof, he passed by without striking it with fire." (Haukdal 1971:141).

The occurrence of an unidentified herb "on everyone's house roof" in Bergen in the early 13th century is mentioned in the saga of the Norwegian king Hákon Hákonsson. Nordhagen (1934) argued convincingly that the unnamed plant had to be *R. rosea*. Its use on house roofs is also mentioned in a 16th century description of Bergen (Nordhagen 1934, 1941), and remained well-known as long as turf roofs were common, i.e. well into the early 20th century. This practice is documented from much of southern Norway, especially along the west coast, northwards to the Salten area of Nordland, North Norway (Donali 1988; Grue 1943; Haukdal 1961; Høeg 1974; Kirkevoll 1940; Leirfall 1968; Nordhagen 1934; Søreide 1952; Strompdal 1929; Vegusdal 1979; Vreim 1943). In Beiarn, Nordland, people believed that the custom had been introduced from Bergen (Vegusdal 1979).

Melheim (1953) studied the flora of turf roofs in Hornindal, W Norway in the early 1930s. *Rhodiola rosea* was still frequent, and always planted if found on house roofs, but people could not any longer give any traditional reason for this practice: "Some said it was because the plant was so beautiful, others because great-grandpa had wished it, others because their neighbours had it like that." (Melheim 1953:49).

Norman (1894), in his flora of Norway north of the Polar Circle, recorded numerous stations of *R. rosea* on house roofs, noting for one of these that it was "som sedvanlig plantet"—"as usual planted." Nordhagen (1934) saw several roofs with planted *R. rosea* in Nordland in the 1930s, and recorded vestiges of an oral tradition related to such use. Vreim (1943:50) noted that he had seen "whole roofs of" *R. rosea* in Beiarn, Nordland. Vegusdal (1979:142) recorded a fading tradition in the same area: "Old superstition said that *fjelljkaur* [*R. rosea*] on the roof had power to protect from fire. Lately, some have retained the custom to keep up the old tradition at the farm, or because they found it decorative. In the past, there were few turf roofs, at least at Øynes, on which *fjelljkaur* had not been planted, and they grew well." This tradition may have been known further north as well, as indicated by the following note from Alta, Finnmark: "In Sámi, we call it *gálbberahtá*. And it used to grow on old turf roofs." (interview 1998).

Sempervivum tectorum may form dense mats of leaf rosettes, which may to some extent protect turf and straw roofs from fire (Fægri 1944). *Rhodiola* does not, and there is not much reason to believe that the plants as such had any real protective value. However, the belief may have some ecological justification. In Central Europe, *Sempervivum tectorum* thrives on old turf roofs, since

these provide more humid conditions—and would thus less easily burn—than young or new roofs, which are much drier, just as *R. rosea* in Norway is often found on old turf roofs. Still, the Norwegian tradition of planting *Rhodiola* on turf roofs is likely to have been inspired by similar use of *Sempervivum tectorum* in areas further south, with *Rhodiola rosea* serving mostly as an apotropaic. Old photographs (e.g. in Nordhagen 1934 and Fægri 1944) frequently show only a single or a few plants placed along the ridge of the roof. On the other hand, Vreim (1943), in a booklet on timber houses and turf roofs, considered this as a useful practice, offering protection of the weakest part of the turf cover. In some cases, e.g. at Meråker (Nord-Trøndelag, Central Norway), *R. rosea* was placed over the door (Høeg 1974), reflecting a widespread European tradition of plants used as apotropaics to guard the house entrance.

The use of *R. rosea* on house roofs is probably rare by now, although many turf roofs still exist. A late 2002 search of the digital photo database at Tromsø museum yielded 908 photographs of turf roofs all over Norway, but not a single one with visible *R. rosea* stands.

People's belief in *R. rosea* as an apotropaic, protecting houses from fire, may be the reason for its celebrated mention in the saga of king Håkon Håkonsson. In 1218, his mother, Inga of Varteig, was challenged to prove the royal parentage of her son by an ordeal of carrying hot iron. Prior to the task, Sigarr of Brabant, an employe of Earl Skule, suggested to one of her friends that she could protect herself from burns by salving her hands with the juice of a plant. When questioned where to find this wondrous herb, Sigarr answered "þat vex á þínum húsum ok hver manns hér í Björgyn"—"it grows on everyone's house roof here in Bergen." As noted by Nordhagen (1934), *R. rosea* is the only likely candidate. Nordhagen, however, fails to note that the offer was refused; Earl Skule was one of Inga's enemies, and she may have had reason to consider the suggestion as an attempt at foul play (Hertzberg 1912)—perhaps as a means of persuading her that she had nothing to fear from the ordeal, and thus agree to it. If so, the plan failed. The ordeal was successfully completed, as far as the historical sources can tell without resorting to the protective powers of *R. rosea*, and Inga's son Håkon Håkonsson went on to become one of the most illustrious Norwegian kings.

DISCUSSION

The uses recorded for *Rhodiola rosea* in Norway are closely reflected in other areas settled by people of Norse origin. Debes (1673) noted that a decoction was used as a kind of "rose water" in the Faroes, presumably as a hair wash; an ointment was used on wounds (Nordhagen 1934). An unpublished Faroese dictionary from about 1670 lists *R. rosea* as *hjalpirót* ("help root"), suggesting some kind of medicinal use, e.g. to improve hair growth (Lange 1960). In Iceland, a decoction of the fresh rhizome was used to wash the head as a cure for head-

ache (Nordhagen 1934); such use was a part of older school medicine. *Rhodiola rosea* was also dried, mixed with butter, and used as an ointment on old wounds (Hallgrimson 1964; Mohr 1786).

In Greenland, the rhizomes of *R. rosea* were eaten by the Eskimos or Inuits (Birket-Smith 1928; Egede 1741; Høygaard 1941; Hughes 1960; Schübeler 1888); leaves and shoots were also consumed. It was also eaten by the Eskimos of North America. In Alaska, both the rhizomes, stems and leaves were eaten, partly fresh (Porsild 1953), fermented or frozen (Moerman 1998). The Eskimos of Nunivak Island, Alaska, prepared a tea from the flowers (Griffin 2001).

The former use of *R. rosea* to treat (or avoid) scurvy is in accordance with its rather high contents of vitamin C. Høygaard (1941, table D) found it to be the richest terrestrial plant source of vitamin C available to the Eskimos in his study area at East Greenland.

Rhodiola rosea is also found in the mountains of Central Europe, and had acquired some reputation as a medicinal plant in this area as well. It is included in several early herbals, e.g. Fuchs (1543) and Bock (1551), and the rhizomes (*Radix rosea*) were sold in pharmacies. The comments in the major Danish herbal of Paulli (1648) seems to be based mainly on Central European tradition. *Rhodiola rosea* does not occur in Denmark, and its use here was based on cultivated plants—Paulli noted that it was found in some “noble gardens”—possibly supplemented by plant material imported from Norway. Both in Denmark and in Central Europe, *R. rosea* was used to cure head-ache (Paulli 1648, Lippert 1995). The German-speaking farmers of South Tyrol (Italy) believed that a decoction in milk promoted pregnancy (Marzell 1979).

In terms of medical properties, the peoples of eastern Asia have found a much wider use of *Rhodiola* species than that of *R. rosea* in Norway and other parts of Europe. In Russian Siberia, *R. rosea* was considered an aphrodisiac, and supposed to ensure a long life. In Mongolia, it was used to treat cancer and tuberculosis. In China, both *R. rosea* (imported) and other *Rhodiola* species were prized for their medical qualities (Germano & Ramazanov 1999). As a cure for tuberculosis, *R. rosea* was also used by the western Eskimos of North America; the disease was treated with raw flowers (Lantis 1959). The Eskimos of Nelson Island, Alaska, used *R. rosea* to treat sores (Ager & Ager 1980).

Rhodiola species, e.g. *R. quadrifida* (Pall.) Fisch. & Mey., *R. rosea*, and *R. sacra* (Prain ex Hamet) S.H. Fu, are currently the focus of substantial interest in terms of medical and pharmacological properties. Studies of Asiatic species have revealed a vast array of chemical compounds (see Brown et al. 2002, Kurkin & Zapesochnaya 1986, Yoshikawa et al. 1995, 1996, 1997), including some with promising antiallergenic effects. The only biochemical study of Norwegian *R. rosea* so far, by Rohloff (2002), identified various terpenes and volatiles, but failed to identify some constituents (rosiridin, rosiridol) reported from Russian material of *R. rosea* (Kurkin et al. 1995), and found only negligible amounts of

octadecadienoic acid, heptanol derivatives and hexadecanoic acid, claimed by Belov et al. (1994) to be some of the main constituents. Thus, the biochemical characteristics of *R. rosea* may vary according to geographical origin, and Norwegian plants could differ from those found in Asia in terms of pharmacological properties—which would be in accordance with folk tradition in the two areas. Alternatively, its potential qualities were undetected in Norwegian tradition, or other plants were considered more effective. Norwegian *R. rosea* is rich in the phenylpropanoid rosavin (S. Dragland, pers. comm.), specific to *R. rosea* and now considered to be one of the most important constituents in terms of medical activity (Brown et al. 2002), which might support the latter hypothesis. The sparse or absent use of *R. rosea* as food in Norway may also have a biochemical explanation; according to Høygaard (1941), Norwegian *R. rosea* has a much sharper taste than the plants found in Greenland.

At present, the old traditions related to *R. rosea* in Norway are probably fading away, e.g. its former use as an apotropaic on house roofs. The vernacular names are more likely to survive, at least as long as *R. rosea* remains a well known and popular ornamental, especially in rock gardens.

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ARCHIVAL SOURCES

NFS (Norsk folkeminnnesamling/Norwegian folklore collection): (a) Gade-Grøn, questionnaires on Norwegian folk medicine, distributed 1911; (b) original material of O.A. Høeg; (c) undated notes by Maurits Fugelsøy; NOS (Norsk ordbok, seddelarkivet/Norwegian dictionary, card archive).

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